

THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF HEALTH AND HUMAN SERVICES  
DEPARTMENT OF PUBLIC HEALTH

Argeo Paul Cellucci, Governor  
William D. O'Leary, Secretary, Executive Office of Health and Human Services  
Howard K. Koh, M.D., M.P.H., Commissioner, Department of Public Health

**CANCER INCIDENCE AND MORTALITY  
IN MASSACHUSETTS  
1992-1996:  
STATEWIDE REPORT**

Bureau of Health Statistics, Research and Evaluation  
Daniel J. Friedman, Ph.D., Assistant Commissioner

Massachusetts Cancer Registry  
Susan T. Gershman, M.S., M.P.H., Ph.D., C.T.R., Director

250 Washington Street  
Boston, MA 02108 - 4619

FEBRUARY 1999



## ACKNOWLEDGMENTS

This report was prepared by Susan T. Gershman, Director, Massachusetts Cancer Registry, and Massachusetts Cancer Registry staff and consultants. Special thanks to Laurie MacDougall for her diligent work in the preparation of this report. Thanks are given to Annie MacMillan, Mary Mroszczyk, Reggie Kenney, and Victor Hong for their editing and data processing efforts. Thanks are given to Dennis Sterzin of the Graphics staff for his cover design. The contributions of Mary McLaughlin and other staff in the Division of Data Processing, and the staff in approximately 100 reporting hospitals are gratefully acknowledged.

### **Massachusetts Cancer Registry Staff**

Susan T. Gershman, M.S., M.P.H., Ph.D., C.T.R., *Director*

Carol L. Lowenstein, C.T.R., M.B.A., *Asst. Director-Registry Operations*

Nancylee Campbell, C.T.R., *Cancer Registrar*

Robert A. Danley, Ph.D., *Demographer*

Debra Dinkins, *Cancer Registrar*

Victor Hong, *Programmer Analyst*

Loi Huynh, *Software Developer*

Regina Kenney, *Data Editor*

John A. Locke, M.P.H., *Geocoder*

Laurie A. MacDougall, M.S., *Epidemiologist*

Ann MacMillan, *Data Analyst*

Roberta McLaughlin, C.T.R., *Cancer Registrar*

Mary Mroszczyk, C.T.R., *Geocoding Coordinator*

Sadie Phillips Scott, *Administrative Assistant*

David Rousseau, *Quality Assurance Coordinator*

Hung Tran, *Software Developer*

### **Massachusetts Cancer Registry Advisory Committee**

Nancy Mueller, Sc.D., *Chair*

Theodore Colton, Sc.D.

Suzanne Condon

Stetson Hall

Frederick Li, M.D.

J. David Naparstek

Philip Nasca, Ph.D.

Susan O'Hara, C.T.R.

Robert Osteen, M.D.

David Ozonoff, M.D., M.P.H.

Jan Platner

Representative Kevin Poirier

Carol Rowen-West, M.P.H.

Claudia Saball

Lawrence Shulman, M.D.

C. Douglas Taylor, M.D.

Carol Venuti, C.T.R.

The data in this report are intended for public use and may be reproduced without permission. Proper acknowledgment of the source is requested.

For further information, please contact the following:

Massachusetts Cancer Registry .....(617) 624-5645

Research and Epidemiology .....(617) 624-5600

Occupational Health Surveillance .....(617) 624-5600

Bureau of Environmental Health Assessment....(617) 624-5757



## TABLE OF CONTENTS

	Page
INTRODUCTION	
Content .....	1
Comparison with Previous Reports .....	2
CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS	
Cancer Incidence and Mortality, 1992-1996 .....	3
Massachusetts Incidence Compared to the U.S.....	5
Cancer Incidence and Mortality Trends in Massachusetts Over Time .....	7
METHODS	
Data Collection .....	17
Data Presentation.....	18
Data Limitations .....	20
TABLES	
Table 1 Cancer Incidence by Sex, Massachusetts, 1992-1996 .....	23
Table 2 Age-Adjusted Incidence Rates for Selected Cancer Sites by Sex, Massachusetts Residents, 1992-1996, and SEER Registries, 1991-1995.....	25
Table 3 Age-Adjusted Cancer Mortality Rates for Selected Sites by Sex, Massachusetts Residents, 1992-1996, and the U.S., 1991-1995.....	27
APPENDICES	
Appendix I ICD Codes Used for this Report .....	31
Appendix II Annual Age-Adjusted Cancer Incidence Rates by Primary Site, 1992-1996.....	35
Appendix III Age-Specific Incidence Rates for Selected Cancer Sites by Sex, Massachusetts Residents, 1992-1996 .....	39
REFERENCES.....	43



# INTRODUCTION

## Content

This report:

- provides statewide information on cancer incidence for twenty-three types of cancer in Massachusetts for 1992 through 1996;
- compares the four most commonly occurring types of cancer in males and females for 1992 through 1996;
- compares Massachusetts average cancer incidence for 1992-1996 with 1991-1995<sup>1</sup> data from the Surveillance, Epidemiology, and End Results (SEER) program, which collects data from nine geographic areas in the United States;
- compares Massachusetts cancer mortality for 1992-1996 with 1991-1995 U.S. mortality<sup>1</sup>; and
- reviews Massachusetts cancer incidence trends for 1992 through 1996.

The report is organized into the following four sections:

**CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS** provides an overview of cancer incidence and cancer mortality in Massachusetts from 1992 through 1996. For selected cancer sites, comparisons are made to data from the SEER program.

**METHODS** provides a detailed explanation of the data collection, data processing and statistical techniques employed in this report.

**TABLES 1 - 3** present data for twenty-three types of cancer, by sex, for 1992-1996.

**Table 1** provides the number of cases and the proportion of all cases represented by each cancer type;

**Table 2** presents and compares age-adjusted cancer incidence rates for Massachusetts, 1992-1996, and the SEER areas, 1991-1995;

**Table 3** presents and compares age-adjusted cancer mortality rates for Massachusetts, 1992-1996 and the U.S., 1991-1995;

**APPENDICES I - III** provide data supplemental to this report.

**Appendix I** provides a listing of ICD (International Classification of Diseases) codes used for the preparation of this report;

**Appendix II** provides age-adjusted incidence rates for selected cancer sites, by sex, for individual years from 1992 through 1996;

**Appendix III** provides age-specific incidence rates for selected sites, by sex, for 1992-1996.

---

<sup>1</sup> 1991-1995 was the most recent period for which SEER incidence data and U.S. mortality data were available at the time this report was prepared.

## Comparison with Previous Reports

This report updates previous annual reports published by the Massachusetts Cancer Registry (MCR), and also provides a basis for comparison of cancer information to be contained in future reports.

This ***Statewide Report*** provides cancer incidence and mortality information for 1992-1996. The format for the ***City/Town Supplement***, which contains standardized incidence ratios for selected cancers for the 351 towns and cities in Massachusetts, is now under revision.



## CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS

### Cancer Incidence and Mortality (1992-1996)

In Massachusetts from 1992 through 1996, there were 147,808<sup>2</sup> newly diagnosed cases of cancer -- 75,047 in males and 72,745 in females (Table 1).

For all types of cancer combined for 1992-1996, the average annual age-adjusted incidence rate among males was 483.2 cases per 100,000 (Table 2). The most commonly diagnosed type of cancer in Massachusetts males for 1992-1996 was prostate cancer, followed by cancer of the bronchus and lung, colon/rectum, and urinary bladder (Figure 1).

For all types of cancer combined for 1992-1996, the average annual age-adjusted incidence rate among females was 351.5 cases per 100,000 (Table 2). Among Massachusetts females, the most commonly diagnosed cancer types were cancers of the breast, bronchus and lung, colon/rectum, and corpus uteri (Figure 1).

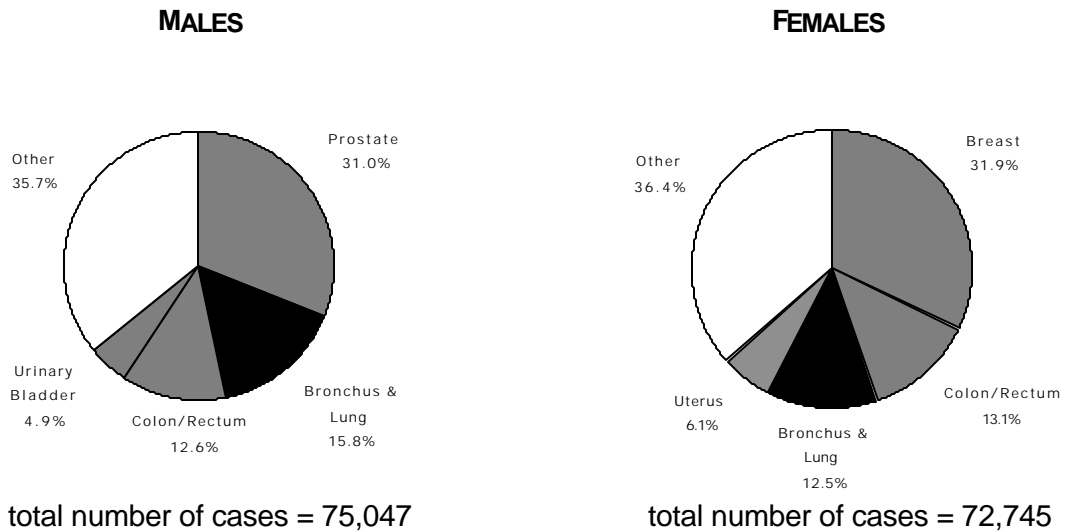
In both sexes, the four leading types of cancer comprised approximately 64% of all new cancer cases for this time period (Figure 1). No other type of cancer constituted more than 5% of new cases in either sex.

For the time period 1992-1996, the leading age-adjusted cancer mortality rates among both males and females were for cancers of the bronchus and lung (Table 3).

---

<sup>2</sup> The male and female case counts will not add up to the total case count because the MCR added two additional gender classifications (transsexuals and persons with sex chromosome abnormalities/hermaphrodites) for cases diagnosed as of January 1, 1995. Cases diagnosed before this date were limited to male or female only.

**Figure 1**  
**DISTRIBUTION OF CANCER INCIDENCE IN MASSACHUSETTS, 1992-1996**  
**by Cancer Type and Sex**



Data for the four leading types of newly diagnosed cancers among males and females for 1992-1996 are summarized below.

**Massachusetts, 1992-1996**

**M A L E S**

Cancer Site	% of all Cases	Age-adjusted incidence rate (per 100,000)
Prostate	31.0	149.9
Bronchus & Lung	15.8	76.4
Colon / Rectum	12.6	59.8
Urinary Bladder	4.9	22.9

total: 64.3%

**F E M A L E S**

Cancer Site	% of all Cases	Age-adjusted incidence rate (per 100,000)
Breast	31.9	113.8
Colon / Rectum	13.1	39.6
Bronchus & Lung	12.5	45.0
Corpus Uteri	6.1	22.7

total: 63.6%

Data for the four leading types of cancer deaths among males and females for 1992-1996 are summarized below.

**Massachusetts, 1992-1996**

**M A L E S**

Cancer Site	% of all Deaths	Age-adjusted mortality rate (per 100,000)
Bronchus & Lung	29.7	67.0
Prostate	11.8	25.4
Colon / Rectum	11.7	25.3
Pancreas	4.4	10.3

total: 57.6%

**F E M A L E S**

Cancer Site	% of all Deaths	Age-adjusted mortality rate (per 100,000)
Bronchus & Lung	21.8	36.3
Breast	18.0	27.6
Colon / Rectum	12.8	16.4
Ovary	5.0	7.9

total: 57.6%

## Massachusetts Incidence Compared to the U.S.

The overall pattern of cancer incidence in Massachusetts is similar to the national pattern (as measured in the SEER areas). Average annual age-adjusted incidence rates for all cancers in Massachusetts and the SEER areas are presented below. (See Table 2 for comparable rates by cancer site/type.)

### TOTAL NUMBER OF CASES PER 100,000:

	MA, 1992-1996	SEER areas, 1991-1995
<b>MALES</b>	<b>483.2</b>	<b>500.5</b>
<b>FEMALES</b>	<b>351.5</b>	<b>347.5</b>
<b>TOTAL</b>	<b>402.6</b>	<b>410.1</b>

In the following summary, two simultaneous criteria have been employed to determine whether relative excesses or deficits existed for individual types of cancer in Massachusetts for 1992-1996 compared to the SEER areas in 1991-1995: first, the average annual age-adjusted incidence rate in Massachusetts for 1992-1996 is at least 20% higher or lower than the SEER areas' rate for 1991-1995; and second, the average annual age-adjusted incidence rate in Massachusetts is at least five cases per 100,000 residents for 1992-1996.

### MALES

A relative excess existed for:

- esophagus  
1992-1996 MA rate: 8.6/100,000      1991-1995 SEER rate: 6.4/100,000      (MA 34.4% above SEER)

A relative deficit existed for:

- leukemia  
1992-1996 MA rate: 10.1/100,000      1991-1995 SEER rate: 13.2/100,000      (MA 23.5 % below SEER)
- urinary bladder  
1992-1996 MA rate: 22.9/100,000      1991-1995 SEER rate: 29.3/100,000      (MA 21.8% below SEER)

### FEMALES

A relative excess existed for:

- cancer of the brain and central nervous system  
1992-1996 MA rate: 6.1/100,000      1991-1995 SEER rate: 5.0/100,000      (MA 22.0% above SEER)

A relative deficit existed for:

- leukemia  
1992-1996 MA rate: 6.3/100,000      1991-1995 SEER rate: 8.0/100,000      (MA 21.2% below SEER)
- urinary bladder  
1992-1996 MA rate: 6.1/100,000      1991-1995 SEER rate: 7.7 /100,000      (MA 20.8% below SEER)



## Cancer Incidence and Mortality Trends in Massachusetts Over Time

### Incidence

When incidence rates are compared for the two endpoints of this report (1992 and 1996), overall cancer incidence decreased 4.4% (9.2% in males, and 0.7% in females). However, increases and decreases can be seen to occur through time in the leading cancers affecting Massachusetts men and women. (See Appendix II for the age-adjusted incidence rates presented here, and Figures 2A, 2B, 3A, 3B, and 4-6 for a more detailed summary of incidence and mortality trends for the leading cancers and others discussed here.)

### Males

Among Massachusetts males, prostate cancer decreased 19.8% between 1992 and 1996. The 1992 incidence rate was 177.7 cases per 100,000 males (its peak incidence), and the 1996 rate decreased to 142.5 cases per 100,000 males. A similar decline has been seen nationally. Devesa et al. (see **REFERENCES**) attribute national increases in prostate cancer incidence over the past decade to changes in diagnostic methodology. Transurethral resections were performed more frequently in the 1980s than in the preceding decade, resulting in increased detection of cases which would have been undetectable by clinical means. Other diagnostic procedures (such as serum testing for prostate-specific antigen (PSA), ultrasound-guided needle biopsy, computed axial tomography (CAT scanning) and bone scanning) have also increased the number of prostate cancer diagnoses in recent years. Wingo et al. (see **REFERENCES**) attribute the more recent downtrends in prostate cancer (since 1992) to the identification of prevalent cases through screening, and then the subsequent falling toward an equilibrium, reflecting only incident cases in the population. Another factor that may be contributing to this decline is incomplete case ascertainment due to increases in outpatient diagnoses that are not reported to central registries. Also, there may have been decreased utilization of PSA screening tests in recent years, which might have been precipitated by recommendations by some organizations against their widespread use during the early 1990s.

Incidence of melanoma of the skin increased among Massachusetts males. In 1992, 12.4 males per 100,000 were diagnosed with melanoma of the skin. By 1996, the incidence rate rose to 14.4 per 100,000, an increase of 16.1%. Devesa et al. attribute this rise in incidence to increased exposure to solar radiation due to changing recreational and clothing habits.

Non-Hodgkin's lymphoma increased slightly among Massachusetts males between 1992 and 1996. In 1992, 17.8 males per 100,000 were diagnosed with non-Hodgkin's lymphoma; by 1996, the number of cases rose to 19.2 per 100,000, an increase of 7.9%. Devesa et al. attribute the rise in national incidence rates to changes in case classification, greater exposure to potential causative agents, and the increasing incidence of AIDS-related lymphomas. The rate of increase in non-Hodgkin's lymphomas, however, has slowed in recent years. Wingo et al. attribute this declining percent increase to the beneficial effects of antiretroviral therapies on the rate of HIV progression.

Age-adjusted incidence rates declined for the other three leading types of cancer among Massachusetts males. Bladder cancer decreased 0.8% from 1992 to 1996, falling from 23.9 cases per 100,000 males in 1992 to 23.7 cases per 100,000 in 1996. Colo-rectal cancer also declined from 1992 to 1996. The incidence rate fell from 62.1 cases per 100,000 males in 1992 to 58.9 cases per 100,000 in 1996, a decrease of 5.2%. The incidence rate for cancer of the bronchus and lung fell from 77.5 cases per 100,000 males in 1992 to 72.3 cases per 100,000 in 1996, a decrease of 6.7%. Wingo et al. attribute the national decline in lung cancer incidence to cancer control and research programs. However, there is concern that the decline in adult tobacco use has slowed, and that tobacco use in the young is again rising, which may cause an increase in lung cancer in 20 to 30 years.

### Females

Among Massachusetts females, breast cancer incidence was fairly stable, decreasing 1.8% between 1992 and 1996. The incidence rate decreased from 115.1 cases per 100,000 females in 1992 to 113.0 cases per 100,000 in 1996. The overall increase in female breast cancer incidence that has occurred over time now appears to have levelled off. Devesa et al. attribute most of the increase in national breast cancer incidence to the earlier detection of tumors resulting from increasing use of mammography and other screening techniques. Other contributing factors may include changes in diet, alcohol consumption, the long-term use of hormone replacement therapy, and certain reproductive variables (such as later age at first childbirth).

The incidence of cancers of the bronchus and lung continues to increase among Massachusetts females, rising from 44.7 cases per 100,000 females in 1990 to 46.0 cases per 100,000 in 1996, an increase of 2.9%. Uterine cancer, the fourth most common cancer among Massachusetts females, rose slightly from 1992 to 1996. The 1992 incidence rate of 21.9 cases per 100,000 females grew to 22.9 cases per 100,000 in 1996, an increase of 4.6%. The third most common cancer among Massachusetts females, colo-rectal cancer, declined 2.5% between 1992 and 1996. The 1992 incidence rate was 40.7 cases per 100,000 females, and the 1996 rate fell to 39.7 cases per 100,000.

## **Mortality**

When cancer mortality rates are compared for the two endpoints of this report (1992 and 1996), certain changes are notable. For males, decreasing death rates have been observed nationally and in Massachusetts for lung and prostate cancers. Wingo et al. attribute decreasing national lung cancer mortality rates to decreased smoking rates over the past thirty years. The decrease in smoking among women, however, has lagged behind that of men, and lung cancer mortality continues to rise in women. For Massachusetts females, lung cancer replaced breast cancer as the leading cause of cancer deaths in women in 1989, and female lung cancer death rates have since continued to increase while breast cancer death rates have decreased. Wingo et al. attribute the downtrend in national breast cancer mortality to the incorporation of breast cancer screening into routine medical care. Advances in the treatment of breast cancer also contribute to the decline in breast cancer mortality.

For colo-rectal cancer, the decreases in mortality among males and females are not well understood. Wingo et al. suggest several possibilities, including increased polyp removal, advances in treatment protocols (e.g., new surgical techniques and adjuvant therapies), and other factors, such as changes in dietary patterns. The explanation for the decline in prostate cancer mortality is also uncertain.

## METHODS

### Data Collection

The MCR collects reports of all newly diagnosed cancer cases from all Massachusetts acute care hospitals (87 reporting facilities in 1996). The MCR compiles summaries of cancer incidence, such as this report, and also produces special reports. These undertakings require data collection efforts that necessitate extensive interaction with hospital tumor registrars. Intensive data evaluation is also required to ensure data quality. The fundamental requirements of any central cancer registry include: (1) complete registration, (2) prevention of duplication, (3) collection of uniform data, i.e., standardization of items, definitions, rules, classification and nomenclature of primary site, histology, staging and procedures, (4) quality control, and (5) efficient data processing.

The Massachusetts data summarized in this report are drawn from data entered on MCR computer files on or before December 11, 1998. The numbers herein may change slightly in future reports, reflecting late reported cases or corrections based on subsequent details from the reporting facilities. Such changes might result in slight differences in numbers and rates in future research studies using MCR data. This is the nature of population-based cancer registries, which receive case reports on an ongoing basis.

MCR files are currently estimated to contain data on 90% of all reportable cases. A more precise estimate will not be possible until cases identified only by outpatient facilities, physicians' offices and death certificates are tracked. Based on estimates of the number of cases projected by the American Cancer Society and comparisons with rates in Connecticut and other SEER areas, Massachusetts data seem reasonably complete.

Coding for primary sites in this report follows the International Classification of Diseases for Oncology (ICD-O, Second Edition) system. The list of reportable neoplasms is the same as that used for SEER program data with the exception of *in situ* neoplasms. SEER includes *in situ* bladder cases in their age-adjusted bladder cancer incidence rate; however, the MCR does not. The MCR began collecting data on *in situ* neoplasms diagnosed as of January 1, 1992; however, *in situ* cases are not included in this report. Comparisons between SEER and MCR data are valid because the codes used for primary site selection are identical (Appendix I).



## Data Presentation

### *Time Periods*

This publication focuses on cancer incidence and mortality in Massachusetts for the time period 1992-1996. Other cancer data presented herein may encompass different aggregate years because of availability at the time of publication. For incidence data in the SEER areas and U.S. mortality data as published by the National Cancer Institute, aggregate data are only available for 1991-1995 (see Ries et al. in **REFERENCES**).

### *Age-Adjusted Rates*

National (SEER) incidence rates, U.S. mortality rates and Massachusetts statewide incidence and mortality rates are sex-specific, age-adjusted rates per 100,000 population, and are calculated by the direct method using the 1970 U.S. Bureau of the Census population distribution as the standard.<sup>3</sup> Rates are age-adjusted using five-year age groups to correct for differences in the age distributions of different populations. Rates adjusted to the same standard can be compared. It is important to note that differences in methodologies used in calculating rates, such as number of age groups used, may cause slight variations in results.

For the computation of Massachusetts age-adjusted incidence and mortality rates in this report, the statewide population for individual years is derived from Massachusetts Department of Public Health estimates based on 1990 U.S. Bureau of the Census counts and 1995 population estimates released by the Massachusetts Institute for Social and Economic Research (MISER) in July, 1998. For reports prior to *Cancer Incidence in Massachusetts, 1982-1989*, the statewide population for individual years was derived from estimates based on 1980 U.S. Bureau of the Census counts and 1990 projections obtained from MISER. If rate comparisons are made to any of these prior reports, data may vary slightly due to these population adjustments.

National age-adjusted incidence rates in this report are obtained from the National Cancer Institute's SEER program data, representing the largest cancer incidence database in the U.S. These data serve as a stable reference point because the SEER areas include approximately 10% of the U.S. population. The SEER program incidence data included in this report are from population-based cancer registries in five states (Connecticut, Hawaii, Iowa, New Mexico and Utah) and four metropolitan areas (Atlanta, Georgia; Detroit, Michigan; San Francisco-Oakland, California; and Seattle-Puget Sound, Washington).

---

<sup>3</sup> It should be noted that the age-adjusted cancer mortality rates presented in this report cannot be compared to those appearing in the Massachusetts Department of Public Health's *Advance Data: Mortality* series because the latter rates are adjusted to the 1940 U.S. Standard Population. This report adjusts to the 1970 U.S. Standard Population for consistency with procedures used by the National Cancer Institute.

U.S. age-adjusted mortality rates in this report are obtained from the National Center for Health Statistics, as published by the National Cancer Institute's SEER program.

### ***Age-Specific Rates***

Massachusetts statewide age- and sex-specific rates per 100,000 residents are given for twenty-three selected types of cancer in Appendix III.

## **Data Limitations**

Three limitations must be considered when interpreting cancer incidence data in this report: under-reporting in areas close to neighboring states; under-reporting for cancers that may not be diagnosed in hospitals; and minor incidence changes resulting in misleadingly large percent differences for rare types of cancer.

### ***Border Areas and Neighboring States***

Some areas of Massachusetts appear to have low cancer incidence, but this may be due to loss of cases in Massachusetts residents that were diagnosed in neighboring states and not reported to the MCR. Presently the MCR has reciprocal reporting agreements with the following fifteen states: Alaska, Arkansas, Connecticut, Florida, Maine, Mississippi, New Hampshire, New York, North Carolina, Rhode Island, South Carolina, Texas, Vermont, Wisconsin and Wyoming.

### ***Cases Diagnosed in Non-Hospital Settings***

During the time period covered by this report (1992 through 1996), only Massachusetts hospitals reported newly diagnosed cases of cancer to the MCR. Some types of cancer in this report may be under-reported because they are diagnosed by private physicians, private laboratories, health maintenance organizations or radiotherapy centers that escape the case identification systems used by hospitals. Particular examples include melanoma of the skin, prostate cancer and certain hematologic malignancies such as leukemia and multiple myeloma. The extent of this under-reporting has not been determined exactly, but cases included in this report represent the great majority of cases statewide and provide an essential basis for observing statewide cancer incidence patterns.

### ***Percent Differences***

The interpretation of percent increases or decreases should be viewed with caution. Apparent increases or decreases in cancer incidence over time may reflect changes in diagnostic methods or case reporting rather than true changes in cancer occurrence. Also, a percent increase or decrease in cases for a cancer with a higher incidence rate has greater public health significance, since larger numbers of patients are affected. For a cancer with a base incidence rate of 100 cases per 100,000 residents, an increase of 25% adds 25 cases per 100,000; for a rarer cancer with a base rate of only 8 cases per 100,000, the same increase (25%) adds only 2 cases per 100,000.

# **TABLES**



**Table 1.**  
**CANCER INCIDENCE BY SEX**  
**Massachusetts, 1992-1996**

<u>Cancer Site / Type</u>	<i>Males</i>		<i>Females</i>		<i>Total</i> <sup>1</sup>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
All Sites	75047	100.0	72745	100.0	147808	100.0
Brain & Central Nervous System	1266	1.7	1149	1.6	2415	1.6
Breast	234	0.3	23235	31.9	23470	15.9
Bronchus & Lung	11837	15.8	9118	12.5	20956	14.2
Cervix Uteri	0	0.0	1534	2.1	1534	1.0
Colon / Rectum	9475	12.6	9565	13.1	19044	12.9
Corpus Uteri & Uterus, NOS	0	0.0	4431	6.1	4431	3.0
Esophagus	1327	1.8	484	0.7	1811	1.2
Hodgkin's Disease	626	0.8	503	0.7	1130	0.8
Kidney & Renal Pelvis <sup>2</sup>	2150	2.9	1383	1.9	3534	2.4
Larynx	1316	1.8	387	0.5	1703	1.2
Leukemia	1549	2.1	1253	1.7	2803	1.9
Liver & Intrahepatic Bile Ducts	668	0.9	301	0.4	969	0.7
Melanoma of Skin	2093	2.8	1719	2.4	3812	2.6
Multiple Myeloma	666	0.9	628	0.9	1294	0.9
Non-Hodgkin's Lymphoma	2956	3.9	2687	3.7	5646	3.8
Oral Cavity & Pharynx	2507	3.3	1192	1.6	3699	2.5
Ovary	0	0.0	2810	3.9	2810	1.9
Pancreas	1329	1.8	1510	2.1	2839	1.9
Prostate	23237	31.0	0	0.0	23237	15.7
Stomach	1586	2.1	1012	1.4	2600	1.8
Testis	912	1.2	0	0.0	913	0.6
Thyroid	432	0.6	1167	1.6	1599	1.1
Urinary Bladder	3640	4.9	1437	2.0	5077	3.4
Other Sites	5241	7.0	5240	7.2	10482	7.1

<sup>1</sup> Totals also include persons classified as transsexuals or hermaphrodites, and persons of unknown sex.

<sup>2</sup> Massachusetts rates for this site include codes 64.9 & 65.9 (ICD-O-2) only for comparability. Massachusetts hospital coding conventions may have assigned some

**Table 2.**  
**AGE-ADJUSTED<sup>1</sup> INCIDENCE RATES<sup>2</sup> FOR SELECTED CANCER SITES BY SEX**  
**Massachusetts Residents, 1992-1996, and SEER Registries, 1991-1995**

<b><u>Cancer Site / Type</u></b>	<b><i>M a l e s</i></b>		<b><i>F e m a l e s</i></b>		<b><i>T o t a l</i></b>	
	<b><u>Massachusetts</u></b>	<b><u>SEER</u></b>	<b><u>Massachusetts</u></b>	<b><u>SEER</u></b>	<b><u>Massachusetts</u></b>	<b><u>SEER</u></b>
<b>All Sites</b>	483.2	500.5	351.5	347.5	402.6	410.1
<b>Brain &amp; Central Nervous System</b>	8.2	7.3	6.1	5.0	7.0	6.1
<b>Breast</b>	1.5	0.9	113.8	110.9	63.1	60.5
<b>Bronchus &amp; Lung</b>	76.4	78.3	45.0	43.0	58.0	58.1
<b>Cervix Uteri</b>	---	---	7.7	8.0	---	---
<b>Colon / Rectum</b>	59.8	54.5	39.6	38.2	48.0	45.2
<b>Corpus Uteri &amp; Uterus, NOS</b>	---	---	22.7	21.6	---	---
<b>Esophagus</b>	8.6	6.4	2.0	1.8	4.9	3.9
<b>Hodgkin's Disease</b>	3.9	3.0	2.9	2.5	3.4	2.7
<b>Kidney &amp; Renal Pelvis<sup>3</sup></b>	13.8	12.8	6.8	6.4	9.8	9.3
<b>Larynx</b>	8.6	7.3	2.1	1.5	5.0	4.1
<b>Leukemia</b>	10.1	13.2	6.3	8.0	7.9	10.3
<b>Liver &amp; Intrahepatic Bile Ducts</b>	4.3	5.5	1.4	2.1	2.6	3.6
<b>Melanoma of Skin</b>	13.0	15.5	8.6	10.6	10.4	12.7
<b>Multiple Myeloma</b>	4.2	5.6	2.9	3.7	3.4	4.5
<b>Non-Hodgkin's Lymphoma</b>	18.1	19.7	12.3	12.4	14.9	15.8
<b>Oral Cavity &amp; Pharynx</b>	16.2	15.8	5.8	6.0	10.4	10.5
<b>Ovary</b>	---	---	14.3	14.8	---	---
<b>Pancreas</b>	8.5	10.3	6.6	7.8	7.4	8.9
<b>Prostate</b>	149.9	162.7	---	---	---	---
<b>Stomach</b>	9.9	10.7	4.1	4.6	6.5	7.2
<b>Testis</b>	5.1	4.5	---	---	---	---
<b>Thyroid</b>	2.6	2.9	6.1	7.2	4.4	5.1
<b>Urinary Bladder<sup>4</sup></b>	22.9	29.3	6.1	7.7	13.0	17.0

<sup>1</sup> age-adjusted to the 1970 U.S. Standard Population

<sup>2</sup> per 100,000

<sup>3</sup> Massachusetts rates for this site include codes 64.9 & 65.9 (ICD-O-2) only for comparability. Massachusetts hospital coding conventions may have assigned some cases to a "not otherwise specified" category.

<sup>4</sup> Massachusetts rates include invasive bladder cancer only.















# **APPENDICES**

# APPENDIX I

## ICD CODES USED FOR THIS REPORT

<b>Cancer Site/Type</b>	<b>..... C o d e s .....</b>	
	<b>ICD-O-2*</b>	<b>ICD-9**</b>
<b>Brain &amp; Central Nervous System</b>	C70.0 - C72.9 See <b>List I</b> (following) for histology codes.	191.0 - 192.9 (no <i>in situ</i> code)
<b>Breast</b>	C50.0 - C50.9 except 9590 - 9980 except 233.0	174.0 - 174.9, 175.0, 175.9
<b>Bronchus &amp; Lung</b>	C34.0 - C34.9 except 9050 - 9053, 9590 - 9980	162.2 - 162.9 except 231.2
<b>Cervix Uteri</b>	C53.0 - C53.9 except 9590 - 9980	180.0 - 180.9 except 233.1
<b>Colon/Rectum</b>	C18.0 - C18.9, C19.9, C20.9, C26.0 except 9590 - 9980	153.0 - 153.9, 154.0, 154.1, 159.0 except 230.3, 230.4
<b>Corpus Uteri &amp; Uterus, NOS</b>	C54.0 - C54.9, C55.9 except 9590 - 9980	179, 182.0 - 182.8 except 233.2
<b>Esophagus</b>	C15.0 - C15.9 except 9590 - 9980	150.0 - 150.9 except 230.1
<b>Hodgkin's Disease</b>	C00.0 - C80.9 (includes O9650 - O9667, P9653 - P9683, B9653 - B9658)	201.0 - 201.9 (no <i>in situ</i> code)
<b>Kidney &amp; Renal Pelvis</b>	C64.9, C65.9 except 9590 - 9980	189.0, 189.1 (no <i>in situ</i> code)
<b>Larynx</b>	C32.0 - C32.9 except 9590 - 9980	161.0 - 161.9 except 231.0
<b>Leukemia</b>	C00.0 - C80.9 (includes O9800 - O9943, O9951)	202.4, 204.0 - 208.9 (no <i>in situ</i> code)

\* *International Classification of Diseases for Oncology, 2nd Ed.* (1990) for cases diagnosed as of 01/01/92

\*\* *International Classification of Diseases, Ninth Revision, Clinical Modification* (1980) for mortality data

<b>Cancer Site/Type</b>	<b>Codes</b>	
	<b>ICD-O-2*</b>	<b>ICD-9**</b>
<b>Liver and Intra-hepatic Bile Ducts</b>	C22.0, C22.1 except 9590 - 9980	155.0, 155.1 except 230.8
<b>Melanoma of Skin</b>	C44.0 - C44.9 (includes O8720 - O8790, B8723 - B8783, P8723 - P8783)	172.0 - 172.9 (no <i>in situ</i> code)
<b>Multiple Myeloma</b>	C00.0 - C80.9 (includes O9731, O9732, P9733, B9733)	203.0 (no <i>in situ</i> code)
<b>Non-Hodgkin's Lymphoma</b>	C00.0 - C80.9 See <b>List II</b> (following) for histology codes.	200.0 - 200.8, 202.0 - 202.2, 202.8, 202.9 (no <i>in situ</i> code)
<b>Oral Cavity &amp; Pharynx</b>	C00.0 - C14.8 except 9590 - 9980	140.0 - 149.9 except 230.0
<b>Ovary</b>	C56.9 except 9590 - 9980	183.0 - 183.9 (no <i>in situ</i> code)
<b>Pancreas</b>	C25.0 - C25.9 except 9590 - 9980	157.0 - 157.9 (no <i>in situ</i> code)
<b>Prostate</b>	C61.9 except 9590 - 9980	185 except 233.4
<b>Stomach</b>	C16.0 - C16.9 except 9590 - 9980	151.0 - 151.9 except 230.2
<b>Testis</b>	C62.0 - C62.9 except 9590 - 9980	186.0 - 186.9 (no <i>in situ</i> code)
<b>Thyroid</b>	C73.9 except 9590 - 9980	193 (no <i>in situ</i> code)
<b>Urinary Bladder</b>	C67.0 - C67.9 except 9590 - 9980	188.0 - 188.9 except 233.7

\* *International Classification of Diseases for Oncology, 2nd Ed.* (1990) for cases diagnosed as of 01/01/92



\*\* *International Classification of Diseases, Ninth Revision, Clinical Modification* (1980) for mortality data

**APPENDIX II**  
**ANNUAL AGE-ADJUSTED<sup>1</sup> CANCER INCIDENCE RATES<sup>2</sup>**  
**by Primary Cancer Site, 1992-1996**  
**Massachusetts, MALES**

<b>Site or Type</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
<b>All Cancers</b>	516.9	493.3	469.8	468.6	469.2
<b>Brain &amp; Central Nervous System</b>	9.5	7.9	9.7	7.0	7.1
<b>Breast</b>	1.2	1.4	1.5	1.4	1.9
<b>Bronchus &amp; Lung</b>	77.5	80.8	78.9	74.3	72.3
<b>Colon / Rectum</b>	62.1	62.4	61.4	56.8	58.9
<b>Esophagus</b>	8.2	7.8	9.4	9.6	8.4
<b>Hodgkin's Disease</b>	3.2	4.4	3.9	3.6	4.4
<b>Kidney &amp; Renal Pelvis</b>	14.8	13.5	14.1	14.2	12.7
<b>Larynx</b>	9.7	9.2	7.4	8.8	8.4
<b>Leukemia</b>	10.4	10.4	9.4	9.8	10.6
<b>Liver &amp; Intrahepatic Bile Ducts</b>	3.8	4.6	4.3	4.3	4.6
<b>Melanoma of Skin</b>	12.4	12.7	12.1	13.5	14.4
<b>Multiple Myeloma</b>	4.3	4.1	4.0	4.5	4.4
<b>Non-Hodgkin's Lymphoma</b>	17.8	17.7	17.6	18.7	19.2
<b>Oral Cavity &amp; Pharynx</b>	17.7	16.6	16.2	15.1	15.7
<b>Pancreas</b>	8.7	9.1	8.3	8.4	8.3
<b>Prostate</b>	177.7	152.6	138.2	143.5	142.5
<b>Stomach</b>	10.1	10.8	9.7	10.2	9.4
<b>Testis</b>	4.6	4.7	5.6	5.5	4.7
<b>Thyroid</b>	2.1	2.5	2.2	2.7	3.4
<b>Urinary Bladder</b>	23.9	23.7	21.1	23.2	23.7

<sup>1</sup> age-adjusted to the 1970 U.S. Standard Population

<sup>2</sup> per 100,000 males

**ANNUAL AGE-ADJUSTED<sup>1</sup> CANCER INCIDENCE RATES<sup>2</sup>**  
**by Primary Cancer Site, 1992-1996**  
**Massachusetts, FEMALES**

<b>Site or Type</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
<b>All Cancers</b>	351.6	355.0	346.4	355.4	349.2
<b>Brain &amp; Central Nervous System</b>	7.1	7.6	6.2	4.9	4.9
<b>Breast</b>	115.1	114.0	112.8	116.0	113.0
<b>Bronchus &amp; Lung</b>	44.7	43.3	44.3	46.4	46.0
<b>Cervix Uteri</b>	8.2	7.6	7.5	7.5	7.8
<b>Colon / Rectum</b>	40.7	40.4	39.2	38.5	39.7
<b>Corpus Uteri &amp; Uterus, NOS</b>	21.9	22.7	22.4	23.7	22.9
<b>Esophagus</b>	1.8	2.4	2.1	2.0	1.8
<b>Hodgkin's Disease</b>	3.0	3.1	3.1	2.5	2.6
<b>Kidney &amp; Renal Pelvis</b>	7.0	7.0	6.7	7.3	5.8
<b>Larynx</b>	2.0	2.5	2.0	1.9	2.0
<b>Leukemia</b>	6.3	6.0	6.2	6.8	6.3
<b>Liver &amp; Intrahepatic Bile Ducts</b>	1.2	1.4	1.4	1.7	1.2
<b>Melanoma of Skin</b>	7.9	8.9	8.4	8.5	9.4
<b>Multiple Myeloma</b>	2.4	3.2	3.1	2.8	3.0
<b>Non-Hodgkin's Lymphoma</b>	12.3	12.0	11.5	13.2	12.8
<b>Oral Cavity &amp; Pharynx</b>	5.2	6.6	6.0	5.3	6.0
<b>Ovary</b>	14.2	14.5	13.9	15.2	14.0
<b>Pancreas</b>	6.8	6.7	5.9	7.1	6.7
<b>Stomach</b>	4.3	4.4	3.6	4.3	3.9
<b>Thyroid</b>	5.6	5.9	6.4	6.3	6.4
<b>Urinary Bladder</b>	6.2	6.1	5.3	6.4	6.6

<sup>1</sup> age-adjusted to the 1970 U.S. Standard Population

<sup>2</sup> per 100,000 females

**ANNUAL AGE-ADJUSTED<sup>1</sup> CANCER INCIDENCE RATES<sup>2</sup>**  
**by Primary Cancer Site, 1992-1996**  
**Massachusetts, TOTAL**

<b>Site or Type</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
<b>All Cancers</b>	414.7	408.2	394.8	399.5	396.4
<b>Brain &amp; Central Nervous System</b>	8.2	7.7	7.8	5.9	5.8
<b>Breast</b>	64.2	63.5	62.7	64.3	62.6
<b>Bronchus &amp; Lung</b>	58.2	58.9	58.7	57.8	56.7
<b>Cervix Uteri</b>	8.2	7.6	7.5	7.5	7.8
<b>Colon / Rectum</b>	49.4	49.6	48.6	46.0	47.6
<b>Corpus Uteri &amp; Uterus, NOS</b>	21.9	22.7	22.4	23.7	22.9
<b>Esophagus</b>	4.6	4.7	5.3	5.4	4.8
<b>Hodgkin's Disease</b>	3.1	3.7	3.5	3.0	3.5
<b>Kidney &amp; Renal Pelvis</b>	10.3	9.7	10.0	10.4	8.8
<b>Larynx</b>	5.2	5.4	4.4	4.9	4.8
<b>Leukemia</b>	8.0	7.8	7.6	8.1	8.2
<b>Liver &amp; Intrahepatic Bile Ducts</b>	2.4	2.8	2.6	2.8	2.7
<b>Melanoma of Skin</b>	9.7	10.4	9.9	10.5	11.4
<b>Multiple Myeloma</b>	3.2	3.6	3.4	3.5	3.6
<b>Non-Hodgkin's Lymphoma</b>	14.6	14.6	14.2	15.6	15.6
<b>Oral Cavity &amp; Pharynx</b>	10.8	10.9	10.5	9.7	10.3
<b>Ovary</b>	14.2	14.5	13.9	15.2	14.0
<b>Pancreas</b>	7.6	7.7	6.9	7.7	7.4
<b>Prostate</b>	177.7	152.6	138.2	143.5	142.5
<b>Stomach</b>	6.7	7.1	6.0	6.7	6.2
<b>Testis</b>	4.6	4.7	5.6	5.5	4.7
<b>Thyroid</b>	3.9	4.3	4.4	4.6	4.9
<b>Urinary Bladder</b>	13.4	13.2	11.8	13.2	13.6

<sup>1</sup> age-adjusted to the 1970 U.S. Standard Population

<sup>2</sup> per 100,000 residents, except for single-sex sites -- per 100,000 females for Cervix Uteri; Corpus Uteri & Uterus, NOS; and Ovary; per 100,000 males for Prostate

## APPENDIX III

### AGE-SPECIFIC INCIDENCE RATES<sup>1</sup> for Selected Cancer Sites by Sex Massachusetts Residents, 1992-1996

<u>Cancer Site / Type</u>	<u>Age Group</u>	<u>Males</u>	<u>Females</u>	<u>Total</u>
<b>All Sites</b>	0-19	17.95	15.75	16.88
	20-44	78.27	122.03	100.32
	45-64	742.81	712.72	727.24
	65-74	2771.56	1528.82	2066.49
	75-84	3291.14	1820.33	2350.99
	85+	3116.95	1544.79	1926.52
<b>Brain &amp; Central Nervous System</b>	0-19	2.97	2.69	2.83
	20-44	4.47	3.21	3.84
	45-64	13.46	10.46	11.90
	65-74	29.02	21.08	24.53
	75-84	30.41	21.04	24.44
	85+	20.63	11.86	13.99
<b>Breast</b>	0-19	0.00	0.03	0.01
	20-44	0.19	45.85	23.16
	45-64	2.34	274.30	143.51
	65-74	7.31	455.40	260.93
	75-84	12.28	472.99	305.49
	85+	13.21	360.38	276.33
<b>Bronchus &amp; Lung</b>	0-19	0.08	0.11	0.09
	20-44	4.84	4.61	4.72
	45-64	127.29	91.69	108.81
	65-74	471.38	260.29	351.90
	75-84	505.20	237.90	335.08
	85+	377.20	93.06	161.84
<b>Cervix Uteri</b>	0-19	----	0.05	----
	20-44	----	10.27	----
	45-64	----	15.30	----
	65-74	----	16.65	----
	75-84	----	14.78	----
	85+	----	11.86	----
<b>Colon / Rectum</b>	0-19	0.03	0.13	0.08
	20-44	4.39	4.24	4.31
	45-64	81.55	55.85	68.21
	65-74	344.66	213.62	270.49
	75-84	505.95	354.53	409.58
	85+	593.45	390.69	439.78

<sup>1</sup> per 100,000

**AGE-SPECIFIC INCIDENCE RATES<sup>1</sup> for Selected Cancer Sites by Sex**  
**Massachusetts Residents, 1992-1996**

<u><b>Cancer Site / Type</b></u>	<u><b>Age Group</b></u>	<u><b>Males</b></u>	<u><b>Females</b></u>	<u><b>Total</b></u>
<b>Corpus Uteri &amp; Uterus, NOS</b>	0-19	----	0.05	----
	20-44	----	4.35	----
	45-64	----	57.45	----
	65-74	----	98.17	----
	75-84	----	93.65	----
	85+	----	51.41	----
<b>Esophagus</b>	0-19	0.00	0.00	0.00
	20-44	0.61	0.05	0.33
	45-64	17.63	2.86	9.96
	65-74	43.63	12.52	26.02
	75-84	51.37	16.94	29.46
	85+	55.30	18.98	27.77
<b>Hodgkin's Disease</b>	0-19	1.59	1.08	1.34
	20-44	5.54	4.70	5.12
	45-64	4.07	2.29	3.15
	65-74	6.29	3.66	4.80
	75-84	5.29	3.88	4.39
	85+	5.78	2.37	3.20
<b>Kidney &amp; Renal Pelvis</b>	0-19	0.88	0.95	0.91
	20-44	2.35	1.54	1.94
	45-64	26.85	12.88	19.60
	65-74	69.60	34.15	49.54
	75-84	79.70	34.31	50.81
	85+	56.13	21.88	30.17
<b>Larynx</b>	0-19	0.03	0.00	0.01
	20-44	0.86	0.19	0.53
	45-64	18.31	5.53	11.68
	65-74	47.69	10.27	26.51
	75-84	39.66	6.26	18.40
	85+	33.84	2.37	9.99
<b>Leukemia</b>	0-19	3.98	3.71	3.85
	20-44	3.14	2.80	2.97
	45-64	14.27	8.14	11.09
	65-74	40.99	21.86	30.16
	75-84	56.09	29.67	39.28
	85+	60.25	31.64	38.56

<sup>1</sup> per 100,000

**AGE-SPECIFIC INCIDENCE RATES<sup>1</sup> for Selected Cancer Sites by Sex**  
**Massachusetts Residents, 1992-1996**

<b><u>Cancer Site / Type</u></b>	<b><u>Age Group</u></b>	<b><u>Males</u></b>	<b><u>Females</u></b>	<b><u>Total</u></b>
<b>Liver &amp; Intrahepatic Bile Ducts</b>	0-19	0.23	0.21	0.22
	20-44	0.80	0.25	0.53
	45-64	7.73	1.95	4.73
	65-74	24.35	7.62	14.88
	75-84	20.96	8.85	13.25
	85+	24.76	9.23	12.99
<b>Melanoma of Skin</b>	0-19	0.23	0.37	0.30
	20-44	5.81	7.03	6.42
	45-64	24.82	17.47	21.00
	65-74	51.34	27.07	37.60
	75-84	71.20	28.38	43.95
	85+	87.49	24.78	39.96
<b>Multiple Myeloma</b>	0-19	0.00	0.00	0.00
	20-44	0.27	0.21	0.24
	45-64	6.58	5.59	6.07
	65-74	21.92	14.78	17.88
	75-84	38.34	19.96	26.64
	85+	29.71	16.34	19.58
<b>Non-Hodgkin's Lymphoma</b>	0-19	1.69	0.82	1.26
	20-44	9.87	5.06	7.45
	45-64	28.45	19.76	23.94
	65-74	75.18	56.87	64.81
	75-84	104.25	76.82	86.79
	85+	116.38	69.60	80.92
<b>Oral Cavity &amp; Pharynx</b>	0-19	0.20	0.29	0.24
	20-44	4.16	1.58	2.87
	45-64	37.77	12.28	24.54
	65-74	68.18	25.28	43.90
	75-84	66.67	29.02	42.71
	85+	82.54	25.31	39.16
<b>Ovary</b>	0-19	----	0.87	----
	20-44	----	7.85	----
	45-64	----	32.89	----
	65-74	----	51.34	----
	75-84	----	47.90	----
	85+	----	34.27	----

<sup>1</sup> per 100,000

**AGE-SPECIFIC INCIDENCE RATES<sup>1</sup> for Selected Cancer Sites by Sex**  
**Massachusetts Residents, 1992-1996**

<b><u>Cancer Site / Type</u></b>	<b><u>Age Group</u></b>	<b><u>Males</u></b>	<b><u>Females</u></b>	<b><u>Total</u></b>
<b>Pancreas</b>	0-19	0.00	0.00	0.00
	20-44	0.86	0.52	0.69
	45-64	14.14	10.52	12.26
	65-74	48.80	37.96	42.67
	75-84	57.04	50.60	52.94
	85+	61.90	48.77	51.95
<b>Prostate</b>	0-19	0.08	----	----
	20-44	0.86	----	----
	45-64	200.63	----	----
	65-74	1088.86	----	----
	75-84	1049.30	----	----
	85+	804.75	----	----
<b>Stomach</b>	0-19	0.00	0.00	0.00
	20-44	1.15	0.82	0.99
	45-64	15.12	5.43	10.09
	65-74	49.51	20.30	32.98
	75-84	83.85	37.76	54.52
	85+	112.25	46.40	62.34
<b>Testis</b>	0-19	0.81	----	----
	20-44	11.64	----	----
	45-64	4.61	----	----
	65-74	1.12	----	----
	75-84	1.13	----	----
	85+	0.00	----	----
<b>Thyroid</b>	0-19	0.25	0.76	0.50
	20-44	2.87	9.18	6.04
	45-64	5.19	10.37	7.88
	65-74	5.68	9.34	7.75
	75-84	5.67	8.52	7.48
	85+	3.30	7.65	6.59
<b>Urinary Bladder</b>	0-19	0.05	0.03	0.04
	20-44	1.51	0.68	1.09
	45-64	30.48	9.55	19.62
	65-74	128.04	33.30	74.41
	75-84	202.27	48.12	104.16
	85+	257.52	56.68	105.30

<sup>1</sup> per 100,000



## REFERENCES

Devesa SS, Blot WJ, Stone BJ, et al.: "Recent Cancer Trends in the United States", *Journal of the National Cancer Institute*, 87(3):175-182, 1995.

*HEALTHSTAT Cancer Registry Coding Guidelines*, HEALTHSTAT, Inc., Brockton, MA, 1989.

Ries LAG, Kosary CL, Hankey BF, Miller BA, Edwards BK (eds): *SEER Cancer Statistics Review, 1973-1995*, National Cancer Institute, Bethesda, MD, 1998.

Rothman KJ and Boice JD: *Epidemiologic Analysis with a Programmable Calculator*, Epidemiology Resources, Inc., Chestnut Hill, MA, 1982.

Wingo PA, Ries LAG, Rosenberg HM, Miller DS, Edwards BK: "Cancer Incidence and Mortality, 1973-1995: A Report Card for the U.S." *Cancer*, 82(6): 1197-1207, 1998.

World Health Organization: *International Classification of Diseases, Ninth Revision, Clinical Modification*, Edwards Bros., Inc., Ann Arbor, MI, 1980.

World Health Organization (Percy C, VanHolten V and Muir C, eds): *International Classification of Diseases for Oncology, 2nd Ed.*, WHO, Geneva, 1990.